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ABSTRACT

Two studies examined trends in research examining trade and industrial (T&I) education and practitioner attitudes regarding the vitality of T&I education. The first study examined the numbers/types of research studies that were published during 1990-1992 in four journals ("Journal of Vocational and Technical Education," "Journal of Vocational Education Research," "Journal of Technology Education," and "Journal of Industrial Teacher Education"). Of the 52 articles located, 35 dealt with technology education, 11 dealt with T&I education, and 6 dealt with technical education. The second study assessed the perceptions of the 79 industrial educators attending the Mississippi Valley Industrial Teacher Education conference regarding the futures of the various fields of industrial education. The 64 respondents (response rate, 81%) represented 44 institutions (85% of which were colleges/universities). Of the 64 respondents, 53 believed that demand for technology education would increase, 9 believed it would decrease, and 2 were unsure. Thirty-two respondents thought that demand for technical education would increase, 12 stated it would decrease, and 20 were unsure. Sixteen respondents stated that demand for T&I education would likely increase, 32 stated it would likely decrease, and 16 were unsure. (Appended is the list of journal issues reviewed.) (MN)

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The Trade and Industrial Education Research Agenda: Implications for the Field

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Nature of the Problem:

The research agenda for trade and industrial education is becoming an issue of serious concern as the roles of the various sub-fields of industrial education have changed in recent years. In the past the distinctions between the sub-fields of industrial education have been relatively clear. Trade and industrial education was focused on vocational industrial education designed to prepare students for employment, technology education (industrial arts) was to provide students with a more general orientation to industry as part of general education, and technical education was either education at the postsecondary level or it was education focused on the preparation of technicians. Each of these sub-fields had the goal of providing some form of instruction regarding industry and the role of each was understood. There was room for each of the fields.

However, with the advent of tech prep, school-to-work, high school career academies, etc. the roles and relationships amongst the sub-fields of industrial education have become blurred. Some sub-fields have spent effort at redefining their roles relative to the changing demands on education. What does an examination of recent research in T&I education say about the efforts of T&I education to adapt to the changing societal demands for education?

Research in any field tends to reflect the nature of what are perceived to be important issues facing that field. The amount of research in a field compared to the amounts of research in related fields can also be viewed as an indicator of the perceived vitality or attention being given to a field. What are the issues being addressed by trade and industrial education (T&I) research and how much research is being conducted regarding T&I versus other fields of industrial education? What might this research imply about the vitality of the field?

In addition, given that research is often conducted by faculty at colleges and universities, is there any relationship between the amount of research being done in T&I and other fields of industrial education, and perceptions of college and university faculty of the future growth of these fields?

In order to address these questions, two studies were conducted. The first reviewed the amounts and types of research that have recently been conducted in T&I and other related industrial education fields. The second assessed college and university faculty members' perceptions of the futures of the various fields of industrial education.

Study one:

The first study reviewed the amounts and types of research that have recently been conducted in T&I versus technology education and technical education.

Research Methods

In order to determine the amounts and types of research that have recently been conducted by the various sub-fields of industrial education, research topics addressed in each of these fields during 1990, 1991 and 1992 within four journals in which industrial educators publish were examined: Journal of Vocational and Technical Education, Journal of Vocational

Education Research, Journal of Technology Education, and Journal of Industrial Teacher Education. The examination focused on determining the research topics addressed in each separate sub-field. The lists for each sub-field were reviewed and a content analysis was done to describe the trade and industrial education agenda, as demonstrated by actual research writing, and how that agenda compares with the agenda of technology education and technical education.

Findings and Conclusions

Table 1 presents the number of articles found within each sub-field based on the titles of the articles reviewed. A listing of the journals and the issues of those journals reviewed can be found in Appendix A. A total of 52 articles related to the three fields of industrial education were found in the journals.

Table 1
Number of Articles Found for Each Field

FIELD NAME	NUMBER OF ARTICLES IN EACH FIELD (N=52)
Technology Education	35
Trade & Industrial Ed.	11
Technical Education	6

The sub-field with the largest number of articles was technology education (35). Eleven articles were found to address T&I. The sub-field with the smallest number of articles was technical education (6).

Table 2 presents a sample of each of the titles of articles that addressed each of the sub-fields. A review of the specific sub-field lists suggests that technology education research has focused on the changing requirements of society and the implications for curriculum change. Those conducting technology education research seem to be accepting a need to change in response to changing educational requirements and are proactively trying to lead that change. In contrast, a review of the types of research reported related to T&I and technical education implies a focus on refinements of past practice. Such a focus is needed to do things better, but it does not address defining how these fields should adjust to the changing needs of society and the implications for changing curriculum. The assumption seems to be that there is a need and will continue to be a need for these fields as they currently exist.

If the amount and nature of the research being reported in each of the sub-fields of industrial education is a reflection of the vitality and direction of each field, it is clear that technology education both has substantial vitality and recognizes the need for substantial change. However, T&I and technical education have been receiving substantially less attention from scholars, and that attention is not focused on positioning these fields for the future.

Table 2
Samples of recent research topics

Technology education

Preparing students for living in a technological society: A problem solving approach to teaching

Do hands-on, technology-based activities enhance learning by reinforcing cognitive knowledge and retention?

Curricular implications for participative management in technology education

The development and validation of a test of industrial technological literacy

Retaining teachers in technology education: Probable causes, possible solutions

Technology and efficiency: Competencies as content

Curriculum change in technology education: A theoretical perspective on personal relevance curriculum designs

Mathematics, science, and technology teachers' perceptions of technology education

Main currents in teacher education: imperatives for technology teacher education

Credentialing of principles of technology teachers: policies and options

The nature of technology and the subject matter of technology education--a survey of industrial teacher educators

Technology teacher education curriculum courses

Social reconstruction curriculum and technology education

Productivity, the workforce, and technology education

T&I education

The effects of task analysis and instructional cues on engine assembly

Teacher and student perceptions of work attitudes in trade and industrial education

Work values and attitudes instruction as viewed by secondary trade and industrial education instructors

The status and needs of secondary trade and industrial education curriculum: A state and national study

The Ohio induction process: perceptions of beginning secondary school trade and industrial teachers

The certification of trade and industrial education teachers in the United States, District of Columbia, Puerto Rico, and the Virgin Islands

An assessment of vocational education foundations curriculum content and the entry-level skills needed by beginning trade and industrial education supervisors

Survival skills workshops for beginning non-baccalaureate degree trade and industrial education teachers

Technical education

Computer simulation in manufacturing technology: A case study

Effectiveness of computer simulation versus lab instruction and sequencing of instruction in teaching logic circuits

An analysis of entry-level skill requirements for blue-collar technicians in electronics firms

Industry perceptions of industry-based training provided by technical college

Predicting student achievement and attrition in a proprietary technical college

Content and strategies for teaching computer-aided drafting

Study two:

The second study assessed college and university faculty members' perceptions of the futures of the three fields of industrial education.

Research Methods

Data were obtained from industrial educators associated with the Mississippi Valley Industrial Teacher Education conference. In order to be a member of the conference, a person must represent a higher education institution which offers industrial education programs located

in a state drained by the Mississippi river. A number of at large members from other institutions are also included. A mailed survey was sent to each of the 79 members of the conference as of August, 1995. Non-respondents were contacted by phone. Eventually responses were obtained from 64 individuals. Respondents were associated with 44 different institutions. The distribution of types of institutions is presented in Table 3.

Table 3
Types of Institutions
(numbers and percentages)

Types	Numbers	Percentage
Colleges and universities	37	85
State departments of ed.	4	9
Secondary schools	1	2
Associations	1	2
Unknown	1	2
	44	100

Colleges and universities made up the majority of the respondents' institutions (85%). The next largest group of responds came from state departments of education which made up only 9 percent.

One of the questions asked of this group was, "Will there be an increase or decrease in demand for the following types of industrial/technology education programs in your state after 5 years?

Findings and conclusions

Table 4 presents the information gathered from all of the 64 respondents regarding their perceptions of the future demands for various types of industrial education programs. The perception of all respondents was that although the other two sub-fields of industrial education would increase, trade and industrial education would decrease.

Table 4
Perceptions of the future
of various types of industrial education programs
across all respondents

Type	Will increase	Will decrease	Did not respond or did not know
Technology Ed	53	9	2
Technical Ed	32	12	20
Trade & Ind	16	32	16

Conclusions:

The number of recent research studies in T&I have been relatively few as compared with the number in technology education, and there have even been fewer studies in technical education. If the amount and nature of the research being reported in each of the sub-fields of industrial education is a reflection of the vitality and direction of each field, it is clear that technology education both has substantial vitality and recognizes the need for substantial change. However, T&I and technical education have been receiving substantially less attention of scholars, and that attention is not focused on positioning these fields for the future.

Why is it that those conducting technology education research seem to be accepting a need to change in response to changing educational requirements and are proactively trying to lead that change while T&I and technical education have been receiving relatively little attention? Maybe it is because the role of industrial arts in general education has been severely challenged in the high schools and it needed to be drastically changed into something called technology education. The need for something new may have prompted the need for research. However, the pressures from the movements toward tech prep and school-to-work programs have also created pressure and the need to change those programs focused on preparing people for careers. These and other educational change initiatives clearly suggest that occupationally specific education will be delayed until after high school for most students. The implications for T&I are tremendous. Does T&I education move into the post-secondary schools? Does it disappear? Does it change from a focus on specific occupations to in high schools a focus on occupational clusters and embrace the tech prep movement?

Based on a review of the types of research reported related to T&I in the journals, people in these fields seem to be assuming T&I will remain the same and will continue to be needed, therefore, they are investigating issues that seem to imply a refinement of past practice. The research has not been focused on defining how these fields should adjust to the changing needs of society and the implications for changing curriculum. Given that there has been little attempt at repositioning T&I in relation to changing needs, will it continue as a viable program in the future?

The second study reported suggests that T&I will probably not have a major role or place in education in the future. If the views of 64 people involved with leadership in T&I education in institutions of higher education or related institutions is any indication, the field of T&I education will decrease substantially in the next five years. This view might be why scholars are not investing their efforts in T&I research. I believe this represents a serious call to all people involved with T&I to begin to think about the need to revitalize the field and to make it more responsive to evolving societal needs if the field is to survive into the 21st century. I believe that if such revitalization takes place, T&I in a modified form can have a glorious future.

Appendix A
Journal issues reviewed

J. of Vocational & Technical Education	J. of Vocational Education Research	J. of Technology Education	J. of Industrial Teacher Education
Year Issue #	Year Issue #	Year Issue #	Year Issue #
1990 Spring 6(2)	1990 Winter 15(1)	1990 Spring 1(2)	1990 Winter 27(2)
1990 Fall 7(1)	Spring (2)	1990 Fall 2(1)	Spring (3)
1991 Spring 7(2)	Summer (3)	1991 Spring 2(2)	Summer (4)
1991 Fall 8(1)	Fall (4)	1991 Fall 3(1)	Fall 28(1)
1992 Spring 8(2)	1991 Winter 16(1)	1992 Spring 3(2)	1991 Winter (2)
1992 Fall 9(1)	Spring (2)	1992 Fall 4(1)	Spring (3)
	Summer (3)	1993 Spring 4(2)	Summer (4)
	Fall (4)		Fall 29(1)
	1992 Winter 17(1)		1992 Winter (2)
	Spring (2)		Spring (3)
	Summer (3)		Summer (4)
	Fall (4)		Fall 30(1)
			1993 Winter (2)
			Spring 30(3)

Note: Total number of topics from journal issues in the above table was 52.